

L3(4.2) Solving Proportions

Ex.1: Solve each proportion.

a) $n:24 = 5:3$

$$\frac{n}{24} = \frac{5}{3}$$

$$n = \frac{24 \times 5}{3}$$

$$n = \frac{120}{3}$$

$$n = 40$$

b) $35:x = 7:4$

$$\frac{35}{x} = \frac{7}{4}$$

$$\frac{x}{35} = \frac{4}{7}$$

$$x = \frac{35 \times 4}{7}$$

$$x = \frac{140}{7}$$

$$x = 20$$

Ex.1: Solve each proportion.

c) $18:21 = m:14$

$$\frac{18}{21} = \frac{m}{14}$$

$$\frac{18 \times 14}{21} = m$$

$$\frac{252}{21} = m$$

$$12 = m$$

$$m = 12$$

d) $16:4 = 12:a$

$$\frac{16}{4} = \frac{12}{a}$$

$$\frac{4}{16} = \frac{a}{12}$$

$$a = \frac{12 \times 4}{16}$$

$$a = \frac{48}{16}$$

$$a = 3$$

Ex.2: A nurse is instructed give patients 60 mg of medicine for every 5 kg of body weight.

How much medicine[?] will she give to a patient who weighs 72kg?

$$\begin{aligned} \left(\frac{\text{medicine}}{\text{weight}} \right) \frac{60}{5} &= \frac{x}{72} \\ x &= \frac{60 \times 72}{5} \\ x &= \frac{4'320}{5} \\ x &= 864 \end{aligned}$$

\therefore she needs to give 864 mg of medicine

Ex.3: To make rice you must combine 1 part rice to 2 parts water in a pot. Therefore, how much water would you need to make 3 cups of rice?

$$\left(\frac{\text{Rice}}{\text{Water}} \right) \frac{1}{2} = \frac{3}{x}$$

$$\frac{2}{1} = \frac{x}{3}$$

$$x = \frac{3 \times 2}{1}$$

$$x = 6$$

\therefore we need 6 cups of water

Ex.4: The dimensions of a rectangle are in the ratio of 5:3. If the longer side is 18cm, what is the length of the shorter side?

$\frac{\text{longer}}{\text{Shorter}} = \frac{5}{3} = \frac{18}{x}$

Flip

$\frac{3}{5} = \frac{x}{18}$

$\frac{18 \times 3}{5} = x$

$\frac{54}{5} = x$

$x = 10.8$

\therefore the length of the short side 10.8 cm

Ex.5: Tom earns \$3 for every \$1 Sadia earns. Therefore, how much does Sadia earn if Tom earns \$45?

$\frac{\text{Tom}}{\text{Sadia}} = \frac{3}{1} = \frac{45}{x}$

$\frac{1}{3} = \frac{x}{45}$

$x = \frac{45 \times 1}{3}$

$x = 15$

\therefore Sadia will earn \$15

Assigned Work:
p.117-118 #4, 5, 6, 7, 9, 10

#4 ²¹⁷
 $\frac{4}{1000} = \frac{60}{15000}$
 $0.004 = 0.004$
 ∴ it is proportional

#5
 $\frac{3}{2} = \frac{x}{12}$
 $\frac{36}{2} = x$
 $x = 18$
 ∴ James will need 18 L of yellow paint

#6
 $\frac{80}{10} = \frac{200}{x}$
 $\frac{10}{80} = \frac{x}{200}$
 $25 = x$
 $x = 25$
 ∴ Ali worked 25 hours to make \$200

#7
 $\frac{4}{3} = \frac{20}{x}$
 $\frac{3}{4} = \frac{x}{20}$
 $\frac{20 \times 3}{4} = x$
 $x = 15$
 ∴ the recipe calls for 15 potatoes.

#9
 $\frac{17}{28} = \frac{51}{x}$
 $\frac{28}{17} = \frac{x}{51}$
 $\frac{28 \times 51}{17} = x$
 $\frac{1428}{17} = x$
 $x = 84$
 ∴ the outer diameter is 84 cm.

#10
 $\frac{23}{10} = \frac{x}{120}$
 $\frac{23 \times 120}{10} = x$
 $2760 = x$
 $x = 276$
 ∴ the robin will beat its wings 276 times in 2 minutes